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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,944	01/03/2001	Barry L. Phillips	BASI.IP2023	3112
24347	7590	07/29/2004	EXAMINER	
HUNTON & WILLIAMS LLP 1601 BRYAN STREET ENERGY PLAZA - 30TH FLOOR DALLAS, TX 75201			SORKIN, DAVID L	
			ART UNIT	PAPER NUMBER
			1723	

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/753,944	PHILLIPS, BARRY L.	
	Examiner	Art Unit	
	David L. Sorkin	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 49-74 is/are pending in the application.
 4a) Of the above claim(s) 74 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 50 is/are allowed.
- 6) ☒ Claim(s) 49 and 51-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 May 2004 has been entered.

Election/Restrictions

2. Newly submitted claim 74 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: While the originally presented invention was a combination of a duct, wing(s) and nozzle(s), claim 74 further places these in combination with "a gas stream, moving through the passageway". Claim 74 appears to be an indefinite and non-statutory claim because it requires both an apparatus (the duct, wing and nozzle) and a method step (moving a gas stream through the duct). See MPEP 2173.05(p)(II) and *Ex parte Lyell*, 17 USPQ2d 1548. The apparatus could be used to practice a materially different method of use such as flowing liquid through the passageway.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 74 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 69-73 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. These claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. In independent claim 69, the phrase “a vortex generator... configured to shed a predefined, ordered vortex” is recited. While it is not clear what the scope of this limitation is, as discussed below regarding the second paragraph of section 112, to the extent understood it is considered that the limitation is insufficiently supported by the specification as filed. While the specification does mention that the invention involves a “method of mixing gas by creating a predictable and ordered vorticity” (page 5), ordered vorticity is not the same as an individual vortex being “ordered”. Further regarding dependent claim 71, which recites “the vortex generator is further configured to reduce turbulence”, while the specification discusses on page 13 that an airfoil may be designed to provide maximum lift/drag ratio and thereby avoid turbulence that may be present in a stall condition, nothing in the specification suggest that the present of the “vortex generator” yields a net reduction in turbulence (compared to if the vortex generator were not there at all).

5. Claims 69-73 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In independent claim 69, the scope of "a vortex generator ... configured to shed a predetermined, ordered vortex" is unclear. It is unclear what standard should be used to determine if a vortex is or is not "ordered". In claim 71, regarding the phrase "the vortex generator is further configured to reduce turbulence" it is unclear what comparison should be made to determine if turbulence has been reduced".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 49, 51, 52, 54-73 are rejected under 35 U.S.C. 102(b) as being anticipated by Streiff et al. (US 5,456,533). Regarding claim 49, Streiff ('533) discloses a system comprising a duct (7) provided with an inner surface defining a passageway capable of communicating a gas stream which one may choose to flow through the passageway in a particular manner of using the system, a wing (30) having a first end (the upper end in Figs. 9a and 9b) and second end (the lower end in Figs. 9a and 9b), an upper surface, and a lower surface, wherein the wing non-movably coupled within the passageway of the duct and capable of shedding a vortex into the gas stream at an

edge of the second end of the wing, the first end and second end extend into the passageway (see Figs. 9a, 9b and 10), the first end positioned upstream of a direction (for example opposite the direction "Z" in Figs. 9a and 9b) of travel of the gas stream which one may choose to flow through the passage, and the second end positioned downstream of said direction; a nozzle (21) to discharge a mixture into gas stream, the nozzle located adjacent the edge of the second end of the wing such that the nozzle discharges the mixture into the vortex at a point wherein the vortex is shed (see Figs. 9a and 9b). Regarding claim 51, the nozzle is positioned to discharge in the direction (Z) substantially opposite said direction (see Figs. 9a and 9b). Regarding claim 52, the system comprises a plurality of wings (30) having a first end and second end, and an upper surface, wherein the wings are non-movably coupled within the passageway of the duct and capable of shedding a vortex at an edge of the second end thereof, each of the first ends and the second end of the plurality of wings extend into the passageway, each of the ends are upstream of a direction of travel of the gas stream, and each of the first end and the second end are downstream of a direction of the direction of travel of the gas stream; and a plurality of nozzles (21) to discharge a mixture into passageway, the nozzle located adjacent the edge of the second end of one of the wings such that the nozzles discharge the mixture into the vortex at a point wherein the vortex is shed (see col. 2, lines 14-23). Regarding claim 54, the wing is non-moveably coupled to the inner surface of the duct at a lift generating angle of attack such that the first end of the wing is positioned substantially upstream a direction of travel of the gas stream through the passageway and such that the second end of the

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wing is substantially down stream of the direction of travel of the gas stream through the passageway (see Figs. 9a and 9b). Regarding claim 55, the system further comprises a second wing (30) having a first end and second end, and upper surface and a lower surface, wherein the second wing is non-moveably coupled to the inner surface of the duct at a lift generating angle of attack such that the first end of the second wing is positioned substantially upstream a direction of travel of the gas stream through the passageway and such that the second end of the second wing is substantially down stream of the direction of travel of the gas stream through the passageway (see Fig. 9a and 9b); and a second nozzle (21) to discharge a mixture into passageway, the second nozzle located adjacent the edge of the second end of the second wing such that the nozzle discharges the mixture into the vortex at a point wherein the vortex is shed by the edge of the second end of the second wing (see col. 2, lines 14-23). Regarding claim 56, the wing and the second wing are coupled to the inner surface of the duct such that the first ends of the wing and the second wing are located substantially along a plane perpendicular to the direction of travel of the gas stream through the passageway of the duct (see Fig. 10, col. 2, lines 14-23). Regarding claim 57, the upper and lower surfaces of the wing defines an upper and lower arcuate shapes of the wing extending from the first end to the second end of the wing wherein the upper arcuate shape is substantially similar to the lower arcuate shape of the wing (see col. 2, lines 14-18; col. 3, lines 25-26, Fig. 3d). Regarding claim 58, Streiff ('533) discloses a system comprising a duct (7) with an inner surface defining a passage; a first wing (30) having a first end and a second end and capable of shedding a vortex at an edge of the

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second end of the first wing, the first wing non-movably coupled with in the passageway of the duct such that the first end of the first wing extends into the passageway and is positioned along a plane within the passageway of the duct, the plane substantially perpendicular to a direction of travel of a gas stream through the passageway; a second wing (30) having a first end and a second end and capable of shedding a vortex at an edge of the second end of the second wing, the second wing non-movably coupled with in the passageway of the duct such that the first end of the second wing is positioned along the plane within the passageway of the duct, the plane substantially perpendicular to a direction of travel of a gas stream through the passageway (see Figs. 9a, 9b, 10); a first nozzle (21) to discharge a mixture into the passageway, the first nozzle located adjacent the edge of the second end of the first wing; and a second nozzle (21) to discharge a mixture into the passageway, the second nozzle located adjacent the edge of the second end of the wing (see Figs. 9a, 9b, 10; col. 2, lines 14-23). Regarding claim 59, the first and second wings are non-movably coupled to first and second opposing walls respectively within the duct along the same plane in the passageway (see lines 14-23). Regarding claim 60, the wings are cambered wings (see col. 2, lines 14-18; col. 3, lines 25-26, Fig. 3d). Regarding claim 61, first and second wings are non-movably coupled to the inner surface of the duct at a lift generating angle of attack such that the first ends of the first and second wings are positioned substantially upstream of the direction of travel of the gas stream through the passageway and such that the second ends of the first and second wings are substantially downstream of the gas stream through the passageway (see Fig. 6). Regarding claims 62-64, third and fourth

wings and nozzles according to claims 62-64 are disclosed (see Figs. 9a, 9b, 10; col. 2, lines 14-23). Regarding claim 65, the wings are cambered wings (see col. 2, lines 14-18; col. 3, lines 25-26, Fig. 3d). Claims 66 and 67 fail to further structurally limit the claimed apparatus, because the limitations of the claims solely relate to intended use of the claimed apparatus. As held in *In re Casey supra.*, "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself". Regarding claim 68, Streiff ('533) discloses a system comprising a duct (7) with an inner surface defining a passage; a first wing (30) having a first end and a second end, the first wing non-movably coupled with in the passageway of the duct such that the first end of the first wing extends into the passageway and is located along a plane within the passageway of the duct, the plane substantially perpendicular to a direction of travel of a gas stream through the passageway; a second wing (30) having a first end and a second end, the second wing non-movably coupled with in the passageway of the duct such that the first end of the second wing extends into the passageway and is located along the plane within the passageway of the duct, the plane substantially perpendicular to a direction of travel of a gas stream through the passageway; a first nozzle (21) to discharge a mixture into the passageway, the first nozzle located adjacent the edge of the second end of the first wing; and a second nozzle (21) to discharge a mixture into the passageway, the second nozzle located adjacent the edge of the second end of the wing (see Figs. 9a, 9b, 10; col. 2, lines 14-23). Regarding claims 69-73, while it is unclear what these claims require, as discussed above with regard to section 112 above, to the extent understood they are considered

anticipated by Streiff ('533). The "duct" is anticipate by reference character "7", the vortex generator/wing is anticipated by reference character "30" and the nozzle is anticipated by reference character "21".

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Streiff ('533), as applied to claim 49 above, in view of Althaus et al. (US 5,518,311). Streiff ('533) does not disclose a second nozzle at the second end of the wing. Althaus ('311) teaches placement of two nozzle at two edges of a wing (see Figs. 8 and 14). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the wing of Streiff ('533) with a second nozzle on a second end as taught by Althaus ('311), because Althaus ('311) explains that such an arrangement improves mixing by extending vortices (see col. 6, lines 15-23). See also *In re Harza*, 124 USPQ 378 (CCPA 1960) and *St. Regis Paper Co. v. Bemis Co., Inc.* 193 USPQ 8, 11 (7th Cir. 1977) regarding the obviousness of duplicating parts.

Allowable Subject Matter

10. Claim 50 is allowed. The closest prior art, Streiff et al. (US 5,456,533) fails to disclose or fairly suggest a nozzle located at an edge of a downstream end a wing of and positioned to discharge in the downstream direction, is combination with the

remaining limitations of the claim. While the intended direction of fluid flow is not considered to be limiting in an apparatus claim, it is considered that a positional relationship among the claimed structural elements is required by the claim, which is not disclosed or rendered obvious by the prior art.

Response to Arguments

11. Applicant does not deny that wings of Streiff ('533) would be capable of performing the functions recited in the claims, but states that "'Capability' to do something does not imply that something is 'configured' for a specific purpose. In any case, given a function recited in an apparatus claim, 'capability' to perform the function is sufficient to anticipate the limitation. See *In re Casey*, 152 USPQ 235 (CCPA 1967). Furthermore, 'the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristic of his claimed product' *In re Fitzgerald* 205 USPQ 594, 596 (CCPA 1980). As explained in *In re Schreiber* 44 USPQ2d 1429 (CA FC 1997): 'A patent applicant is free to recite features of an apparatus structurally or functionally. [] Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *Swinehart*, 439 F.2d at 213, 169 USPQ at 228: where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon'. In the instant case, there is overwhelming reason to believe the wings of Streiff ('533) possess the capability to

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create a vortex as claimed. The physical principle behind creation of vortices by wings is that fluid on a high pressure side of the wing curves around the side of the wing to reach the low pressure side. (see for example "Wing Vortices" by the U.S Centennial of Flight Commission".) Because the wings of Strieff ('533) are mounted at an acute angle to the direction of the duct, (as opposed to parallel or perpendicular) there will be a high pressure side and low pressure side when fluid is flowing in either direction.

12. Applicant argues that a vortex is somehow exclusive of turbulent flow, but such is not the case. For example, according to the enclosed NASA glossary, under the entry for "vortex" is stated that "Turbulent flow is made up of many little vortices".

Furthermore, as explained Warhaft, "Transition and Turbulence", "There is no such thing as a laminar smokestack". If applicant is alleging that applicant's smoke stack does not have turbulent flow but instead has laminar flow, applicant is simply wrong.

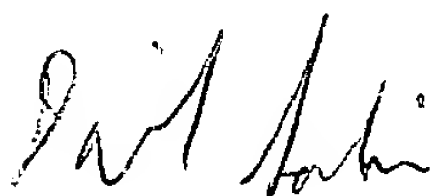
13. Regarding applicant's discussion of "a point where the vortex is shed", the entire edge of a wing is involved in creating a vortex (see for example "Wing Vortices" by the U.S Centennial of Flight Commission".) The location of the nozzle of Steiff ('533) is thusly entirely consistent with the "a point where the vortex is shed" recitations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 571-272-1148. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Sorkin

David L. Sorkin
Examiner
Art Unit 1723